

IASI L0 and L1 Daily Monitoring Report **Metop-B**

IASI monitoring team

05/11/2021 00:00:00 - 06/11/2021 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the Metop-B satellite retrieved from the IASI L0 and L1 ENG product (3 minutes data packet) for 05/11/2021 00:00:00 - 06/11/2021 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 05/11/2021 00:00:00 - 06/11/2021 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	469	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	-	-	-	-
PX2 (135)	-	-	-	-
PX3 (140)	-	-	-	-
PX4 (145)	-	-	-	-
IMG (150)	-	-	-	-
VER (160)	2106	10298	20211105114842.415	20211105122637.674
VER (160)	10298	7219	20211105122637.674	20211105140618.400
VER (160)	7219	7224	20211105140618.400	20211105140618.400
VER (160)	7224	7229	20211105140618.400	20211105140618.400
VER (160)	7229	7234	20211105140618.400	20211105140618.400
VER (160)	7234	7239	20211105140618.400	20211105140618.400
VER (160)	7239	7244	20211105140618.400	20211105140618.400
VER (160)	7244	7249	20211105140618.400	20211105140618.400
VER (160)	7249	7254	20211105140618.400	20211105140618.400
VER (160)	7254	7259	20211105140618.400	20211105140618.400
VER (160)	7259	7264	20211105140618.400	20211105140618.400
VER (160)	7264	7220	20211105140618.400	20211105140618.400
VER (160)	7220	7225	20211105140618.400	20211105140618.400
VER (160)	7225	7230	20211105140618.400	20211105140618.400

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	7230	7235	20211105140618.400	20211105140618.400
VER (160)	7235	7240	20211105140618.400	20211105140618.400
VER (160)	7240	7245	20211105140618.400	20211105140618.400
VER (160)	7245	7250	20211105140618.400	20211105140618.400
VER (160)	7250	7255	20211105140618.400	20211105140618.400
VER (160)	7255	7260	20211105140618.400	20211105140618.400
VER (160)	7260	7265	20211105140618.400	20211105140618.400
VER (160)	7265	7221	20211105140618.400	20211105140618.400
VER (160)	7221	7226	20211105140618.400	20211105140618.400
VER (160)	7226	7231	20211105140618.400	20211105140618.400
VER (160)	7231	7236	20211105140618.400	20211105140618.400
VER (160)	7236	7241	20211105140618.400	20211105140618.400
VER (160)	7241	7246	20211105140618.400	20211105140618.400
VER (160)	7246	7251	20211105140618.400	20211105140618.400
VER (160)	7251	7256	20211105140618.400	20211105140618.400
VER (160)	7256	7261	20211105140618.400	20211105140618.400
VER (160)	7261	7266	20211105140618.400	20211105140618.400
VER (160)	7266	7222	20211105140618.400	20211105140618.400
VER (160)	7222	7227	20211105140618.400	20211105140618.400
VER (160)	7227	7232	20211105140618.400	20211105140618.400
VER (160)	7232	7237	20211105140618.400	20211105140618.400
VER (160)	7237	7242	20211105140618.400	20211105140618.400
VER (160)	7242	7247	20211105140618.400	20211105140618.400
VER (160)	7247	7252	20211105140618.400	20211105140618.400
VER (160)	7252	7257	20211105140618.400	20211105140618.400
VER (160)	7257	7262	20211105140618.400	20211105140618.400
VER (160)	7262	7267	20211105140618.400	20211105140618.400
VER (160)	7267	7223	20211105140618.400	20211105140618.400
VER (160)	7223	7228	20211105140618.400	20211105140618.400
VER (160)	7228	7233	20211105140618.400	20211105140618.400
VER (160)	7233	7238	20211105140618.400	20211105140618.400
VER (160)	7238	7243	20211105140618.400	20211105140618.400
VER (160)	7243	7248	20211105140618.400	20211105140618.400
VER (160)	7248	7253	20211105140618.400	20211105140618.400
VER (160)	7253	7258	20211105140618.400	20211105140618.400
VER (160)	7258	7263	20211105140618.400	20211105140618.400
VER (160)	7263	7268	20211105140618.400	20211105140618.400
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
05/11/2021 00:00:07	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	469	-
GQisFlagQual set (PX1)	99.56 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.66 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

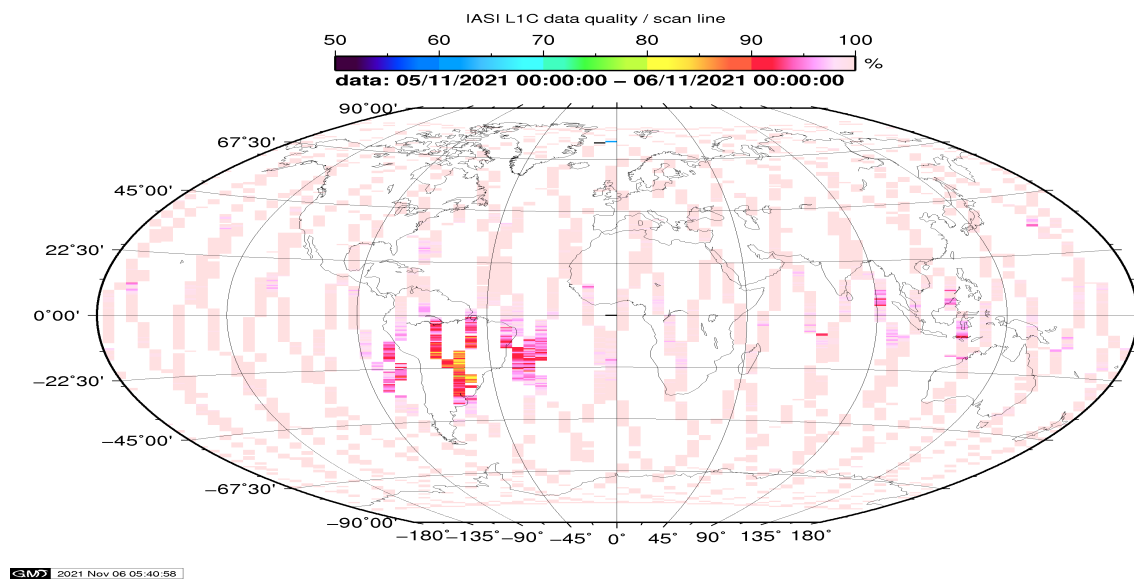


Figure 1: L1C data quality

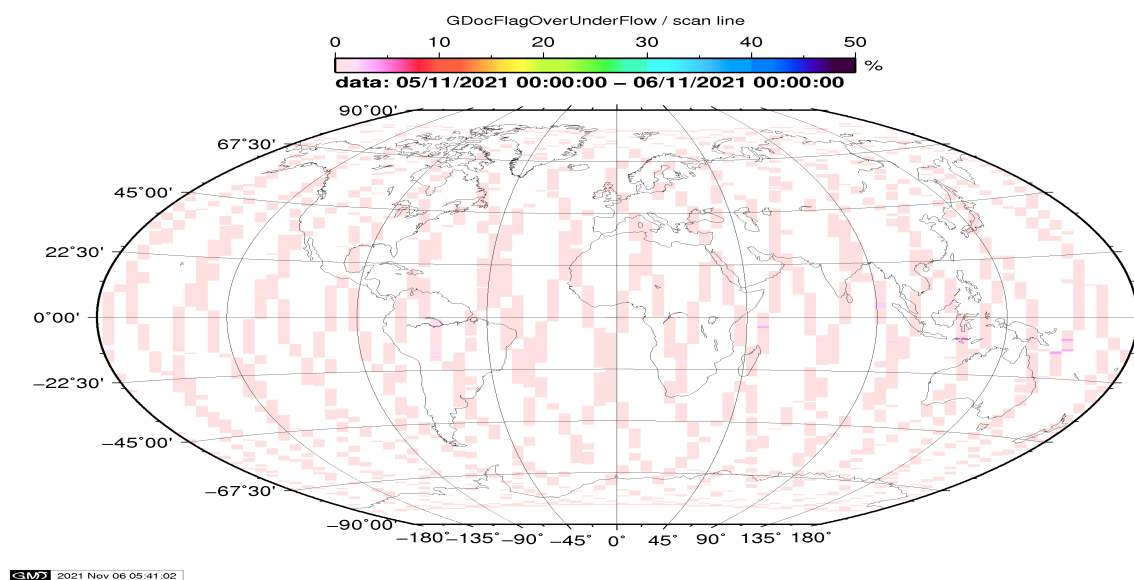


Figure 2: Flag of Over and Under Flows

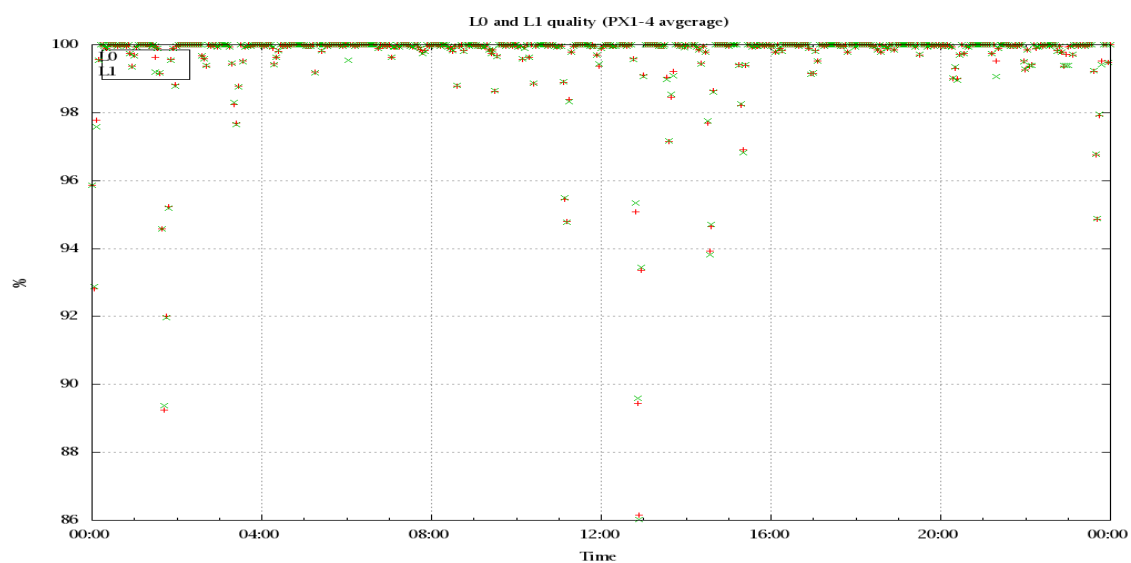


Figure 3: Level 0 and 1C overall quality

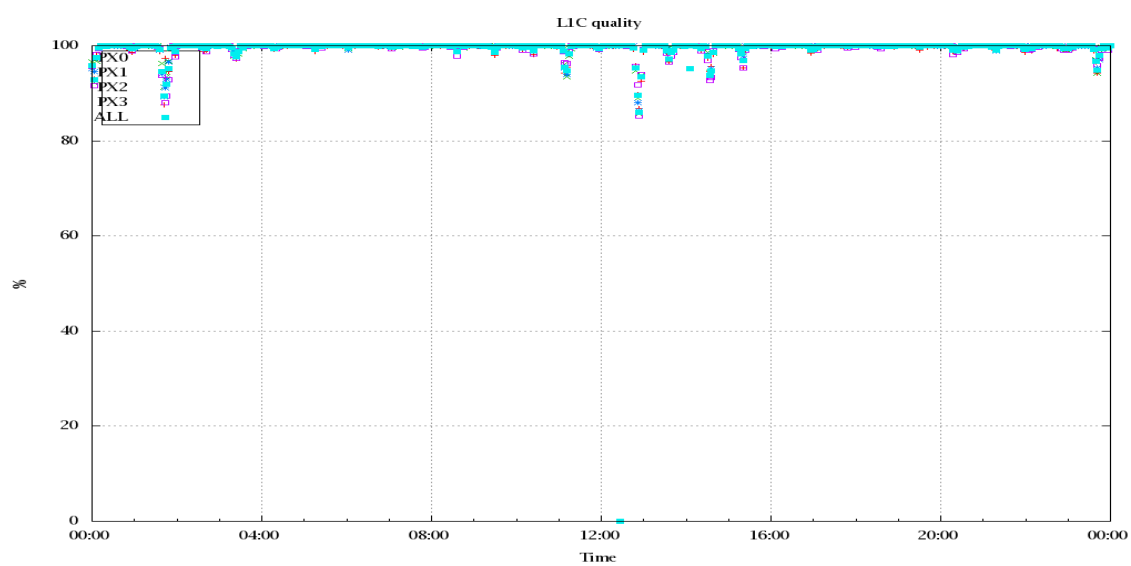


Figure 4: Level 1C quality

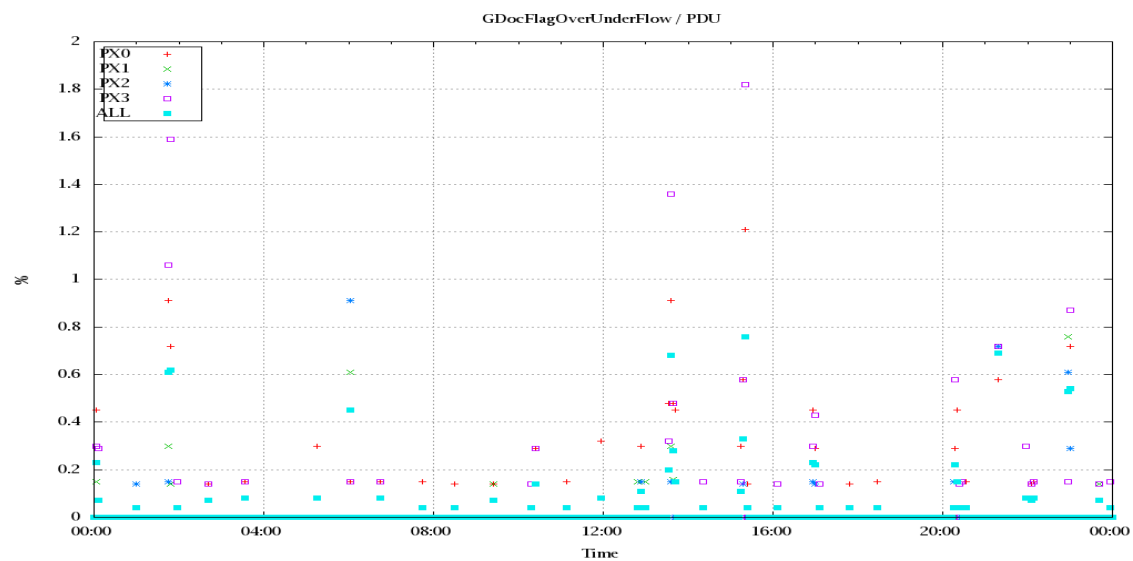


Figure 5: Timeseries of flag of Over and Under Flows

5 Radiance monitoring based on NWP

The radiance monitoring compares the IASI measurements (L1C-eps-products) obtained under clear sky situation over sea with modeled radiances. Cloud identification is based on cloud flag of co-located AVHRR L1B data in addition to information from the IASI L1C clustering analysis here only homogenous situations are taken into account (99.0 percent in first class).

A radiative transfer model (RTM) is feed with co-located ECMWF profiles of T, water vapor and Ozone. Between March 2007 and the 18th of May 2010 RTIASI in Version 4.0 is used. After that date the RTTOV model in V9.3 is used.

Information about the SST is obtained from the AVHRR L1B or taken from AVHRR scenes analysis (CGS only). In the following figures 28 to 34, the so-called radiance anomaly is shown. The radiance anomaly is defined as the difference between the quarter daily radiance average OBS-CAL (over all pixels and scan positions 10 to 20) and the average bias OBS-CAL (over all pixels and scan positions 10 to 20) of the last 30 days.

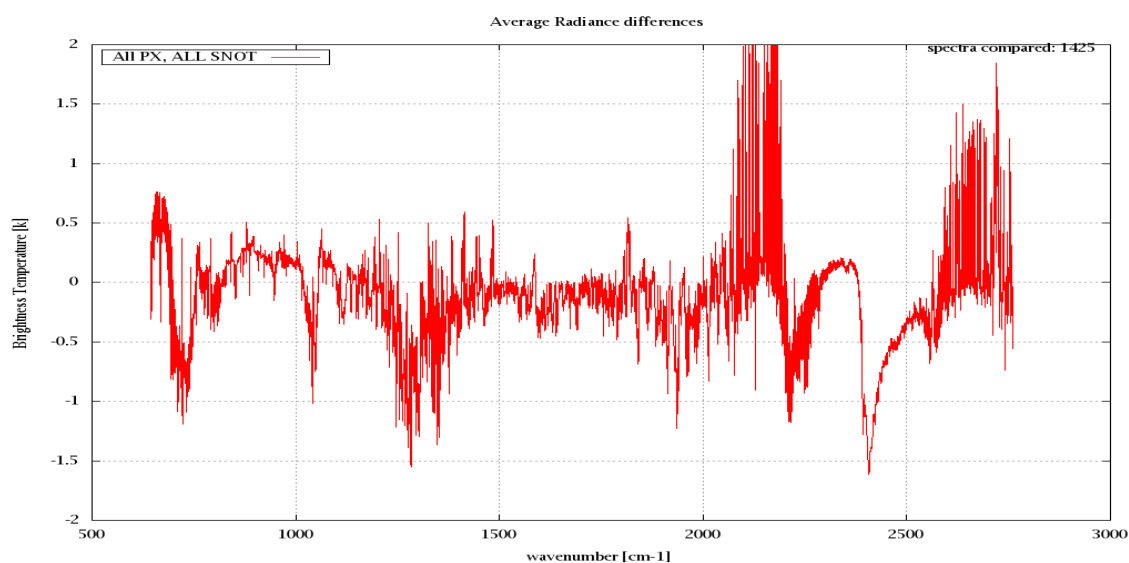


Figure 6: Average Radiance differences: OBS-CAL

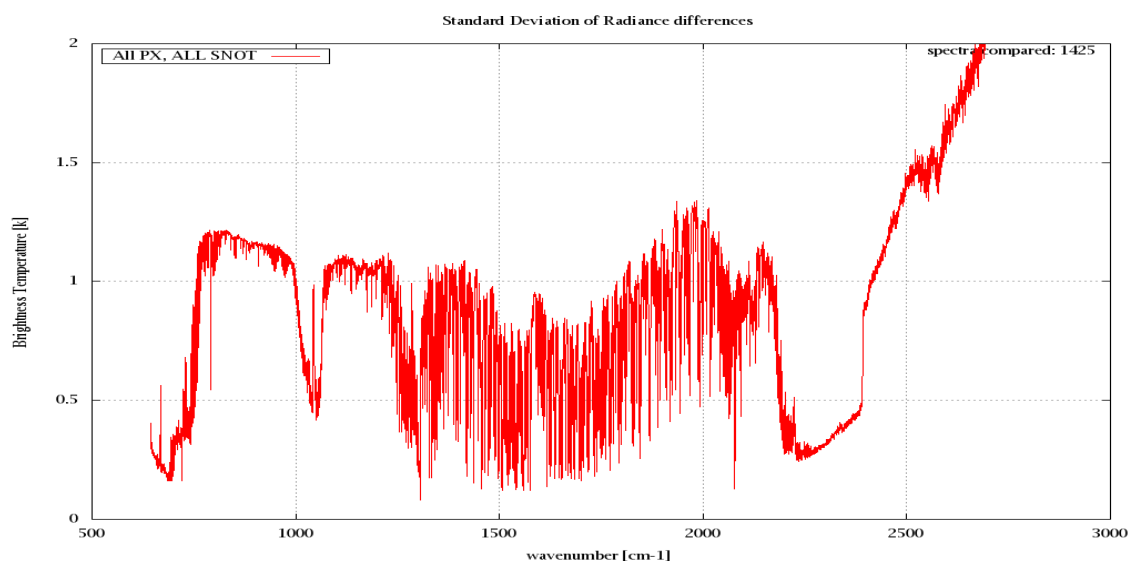


Figure 7: Standard Deviation of Radiance differences

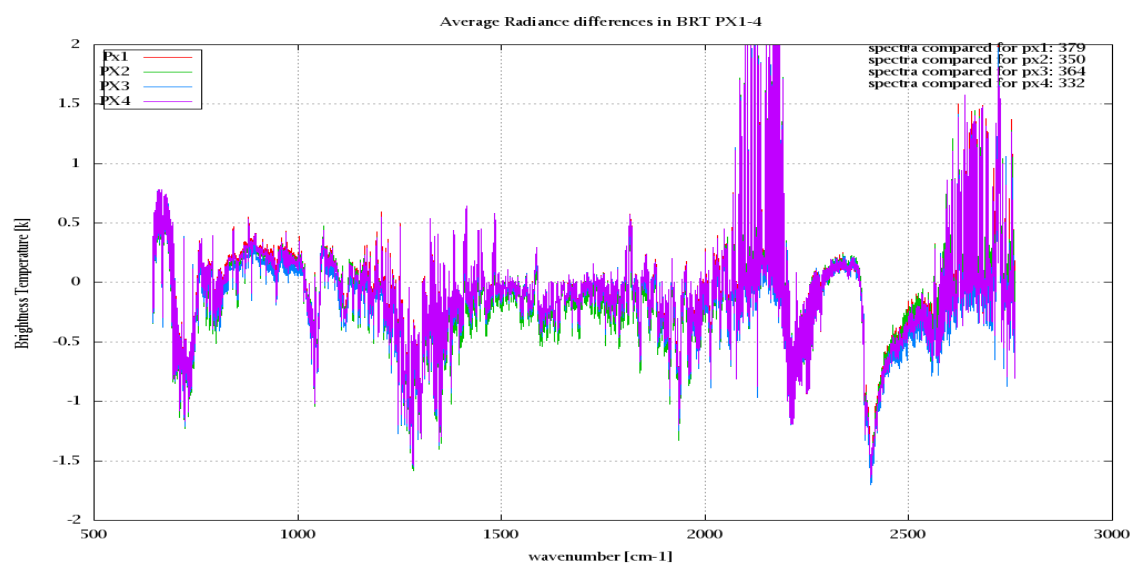


Figure 8: Average Radiance differences: OBS-CAL

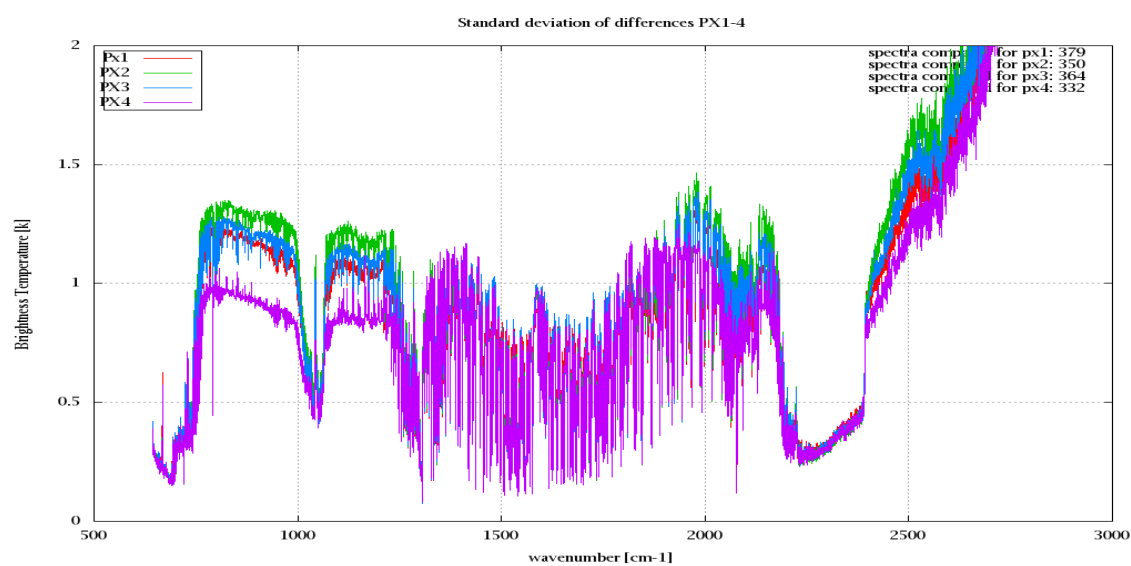


Figure 9: Standard Deviation of Radiance differences

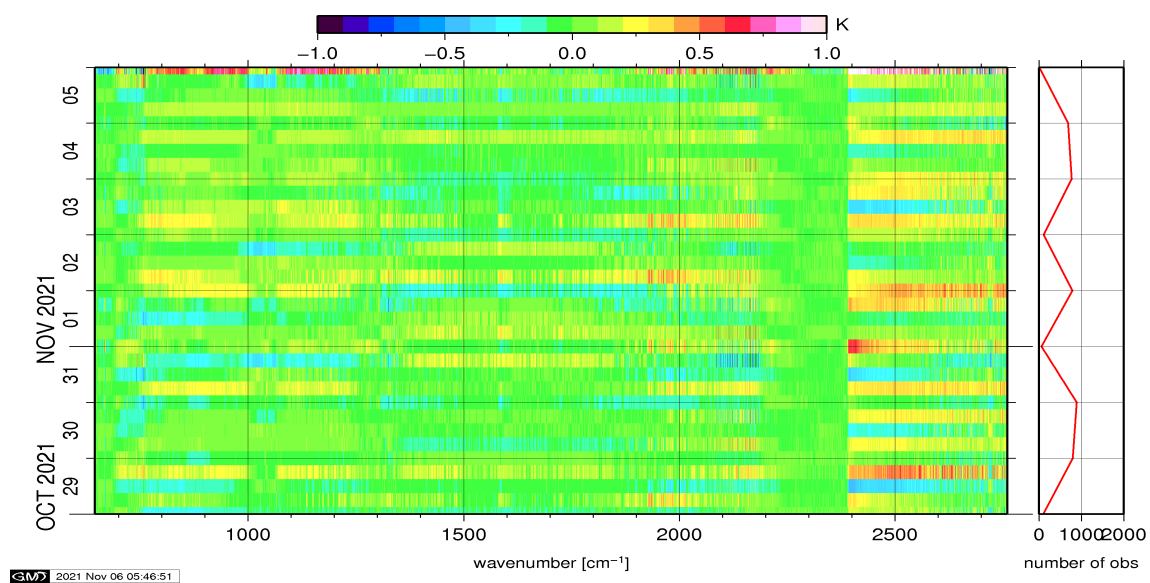


Figure 10: Radiance Anomaly in BT: All Channels

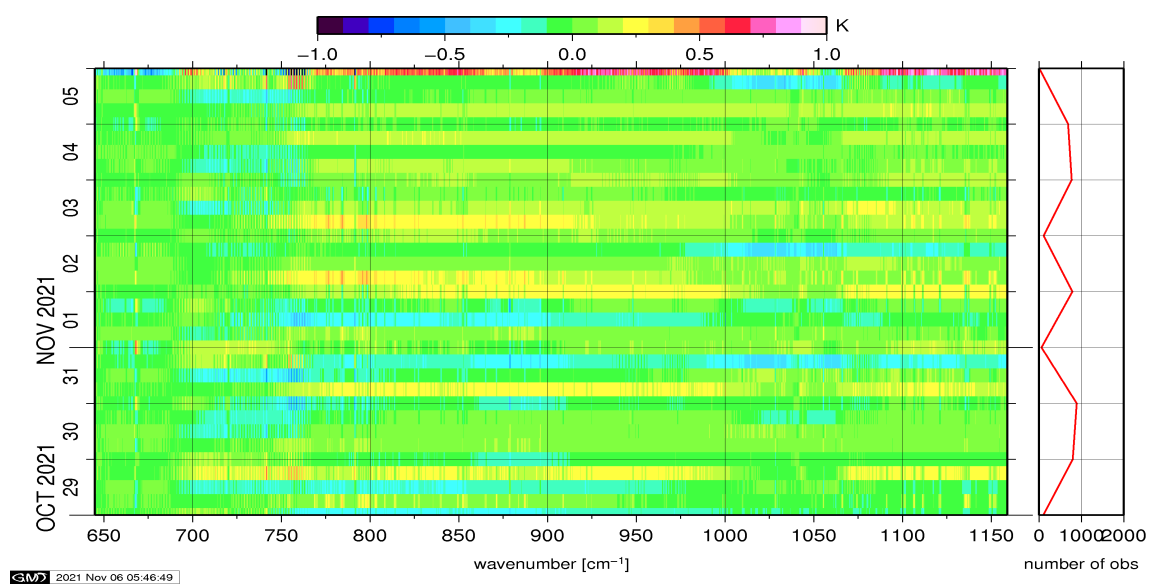


Figure 11: Radiance Anomaly in BT: IASI Band 1

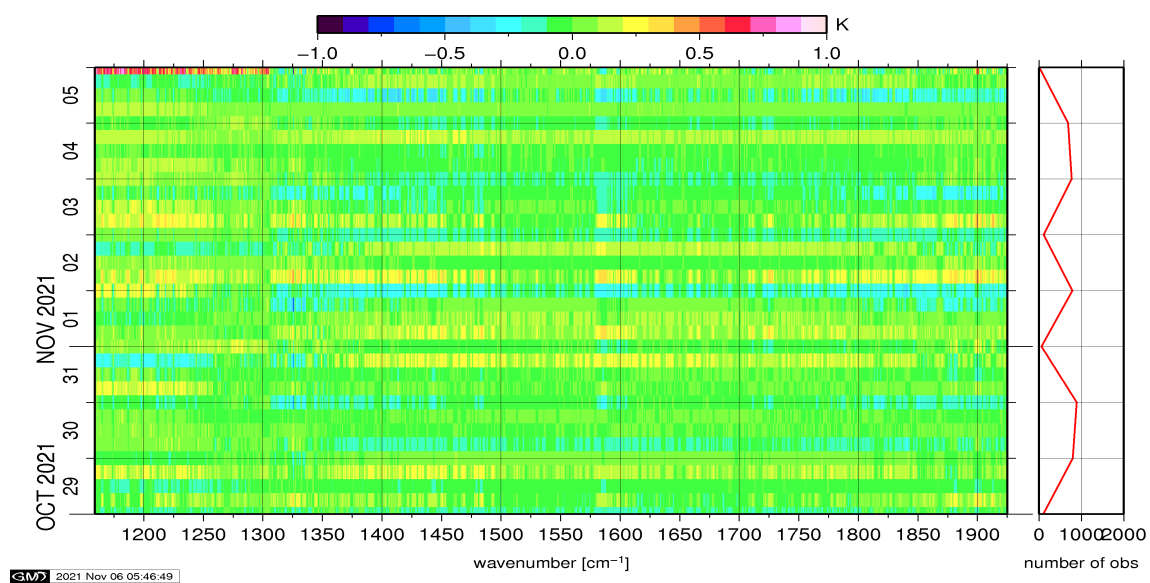


Figure 12: Radiance Anomaly in BT: IASI Band 2

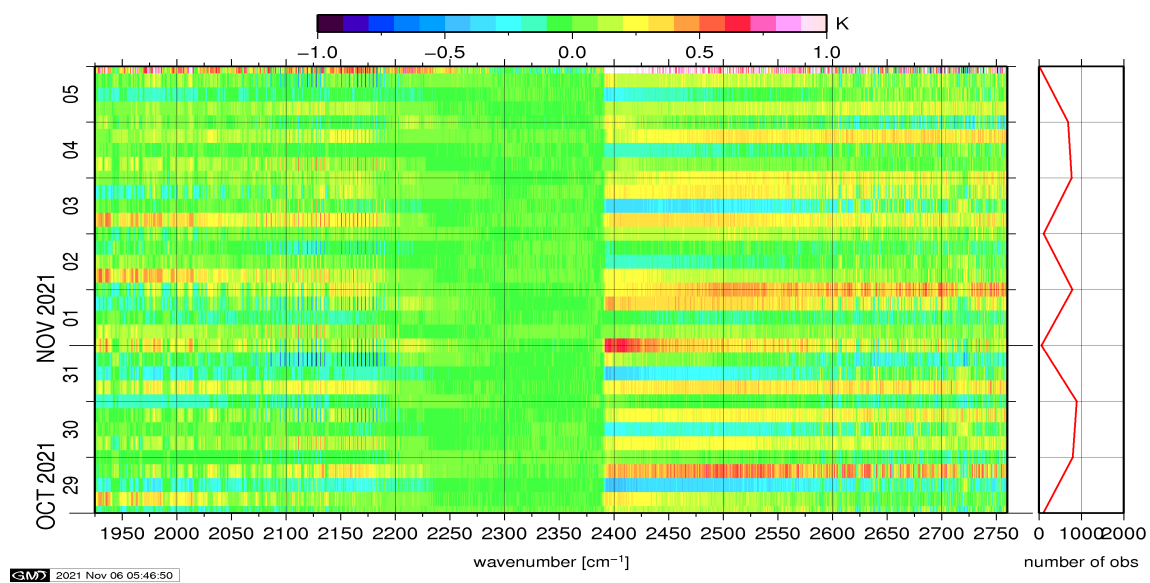


Figure 13: Radiance Anomaly in BT: IASI Band 3

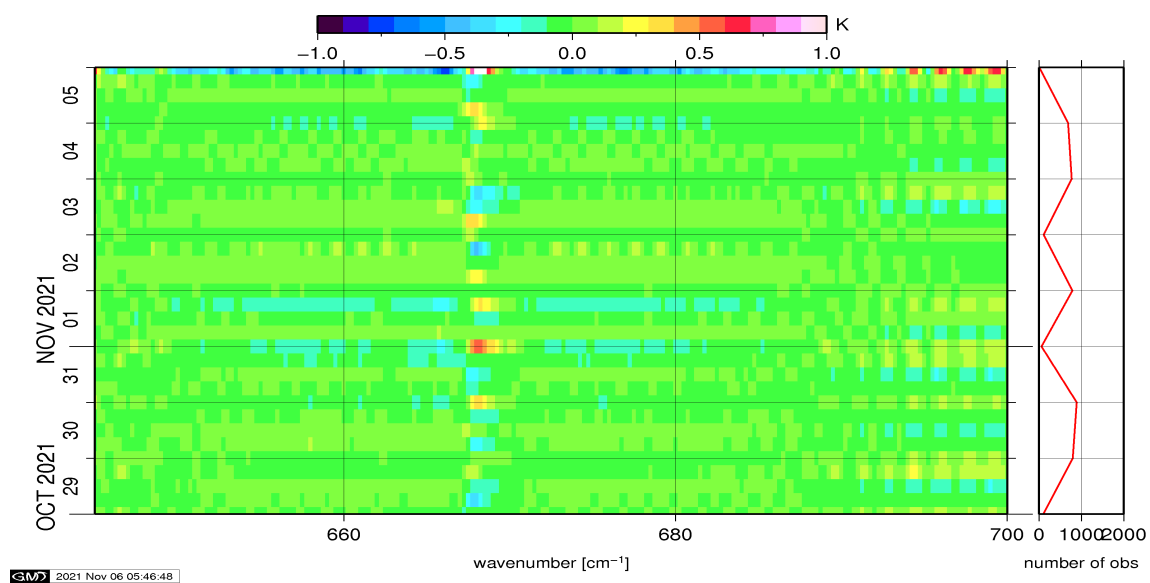


Figure 14: Radiance Anomaly in BT: CO2 14

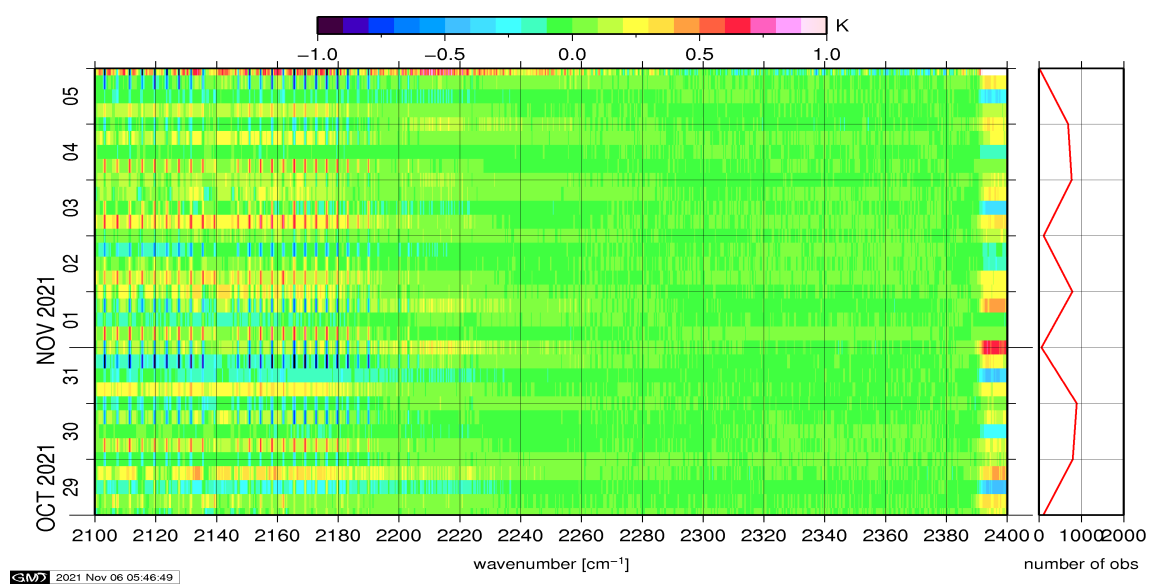


Figure 15: Radiance Anomaly in BT: CO2 4.3

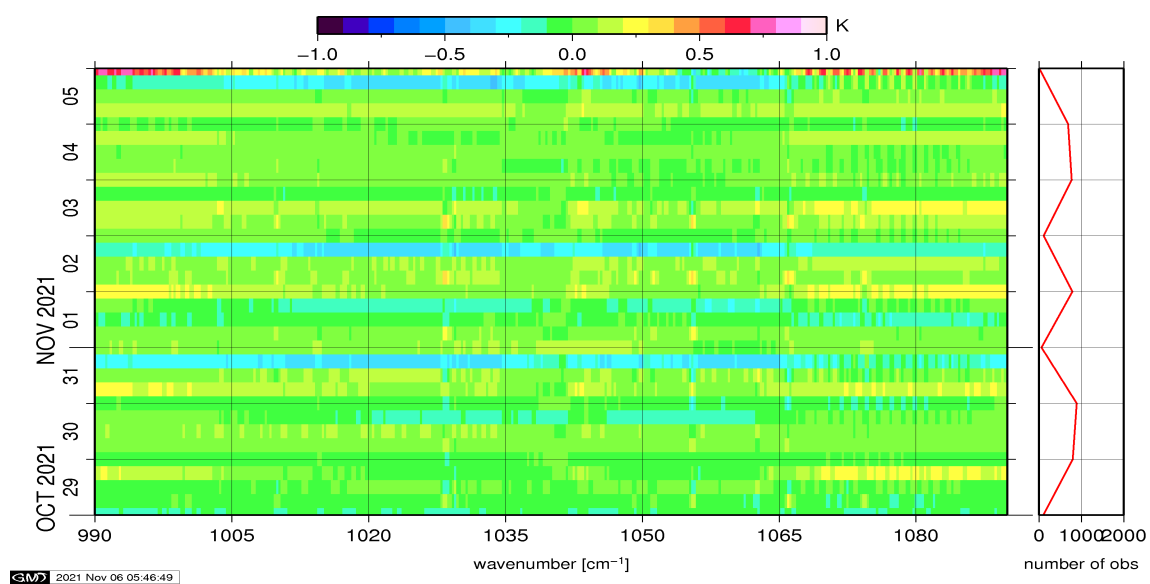


Figure 16: Radiance Anomaly in BT: O3

6 IASI-HIRS radiance comparison Channel 1-19

The radiance comparison of IASI and HIRS/4 on-board Metop is performed on all pixels with distances smaller than 3 km between IASI and HIRS. All sky conditions are covered. The radiance differences IASI - HIRS are given in brightness temperatures at 280K reference NeDT. All conditions (clear, cloudy, day and night) are given in red in the following figures. The clear sky conditions at night are given in green and the clear sky cases during daylight are displayed in blue.

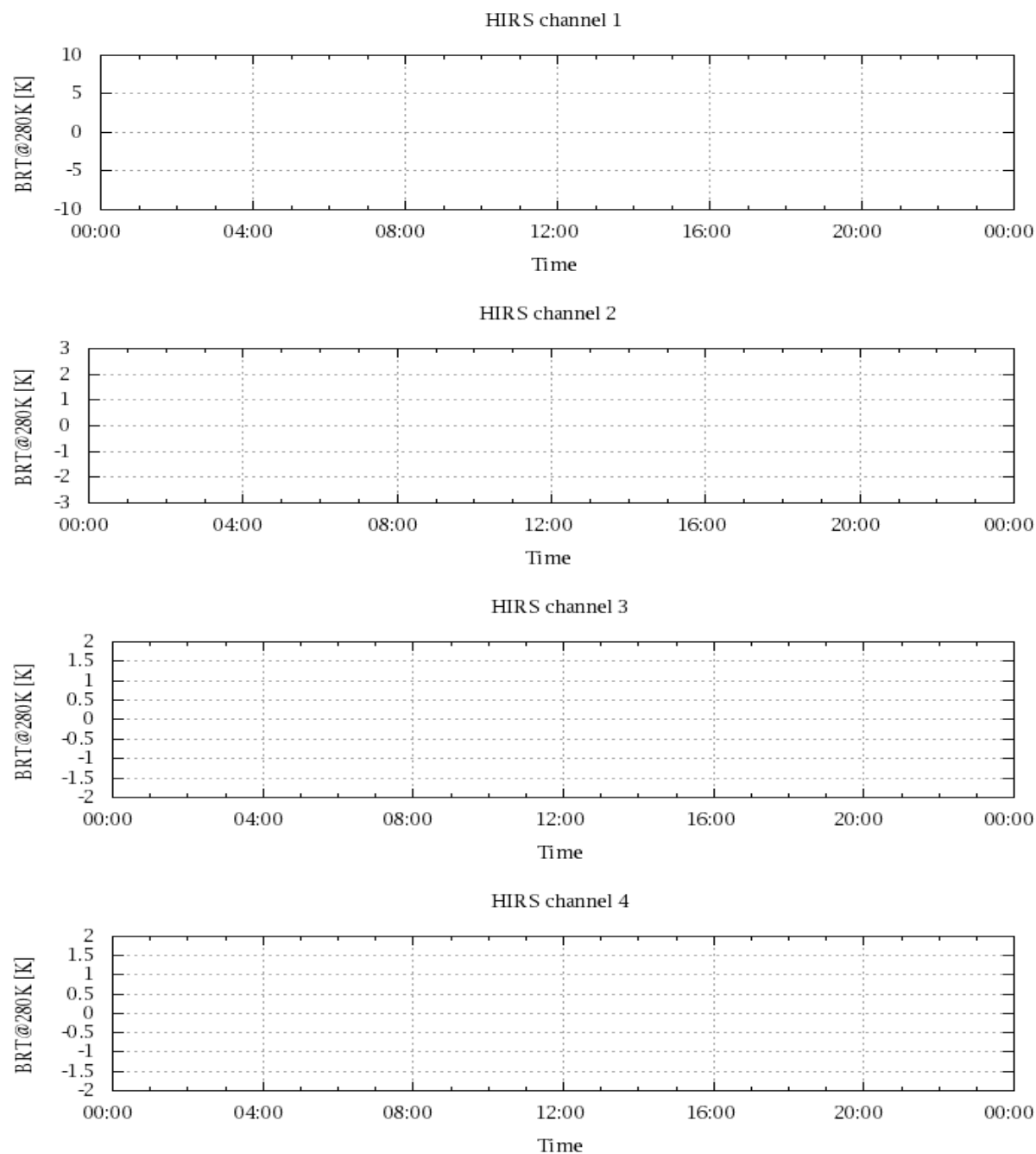


Figure 17: Radiance Differences in BT

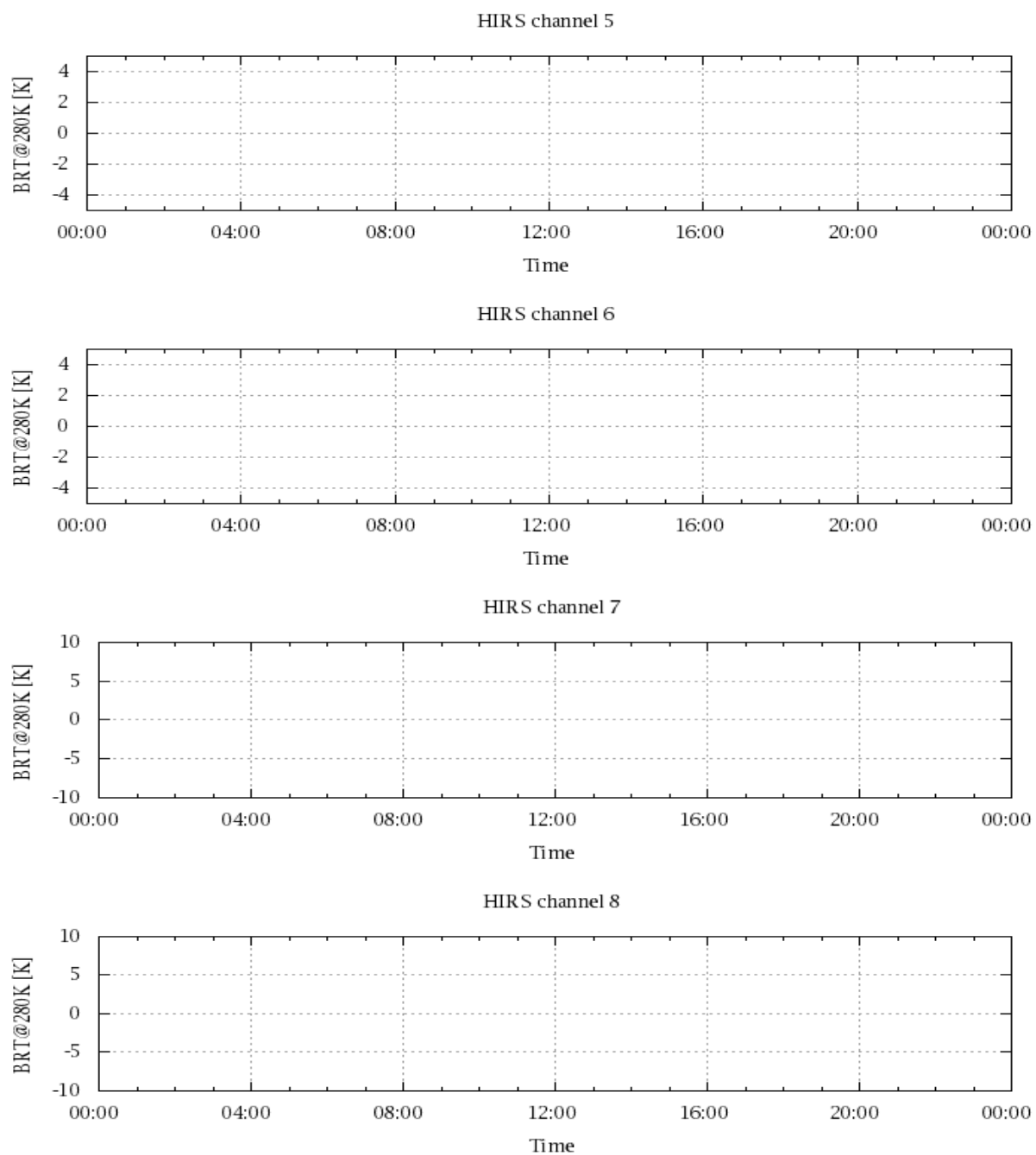


Figure 18: Radiance Differences in BT

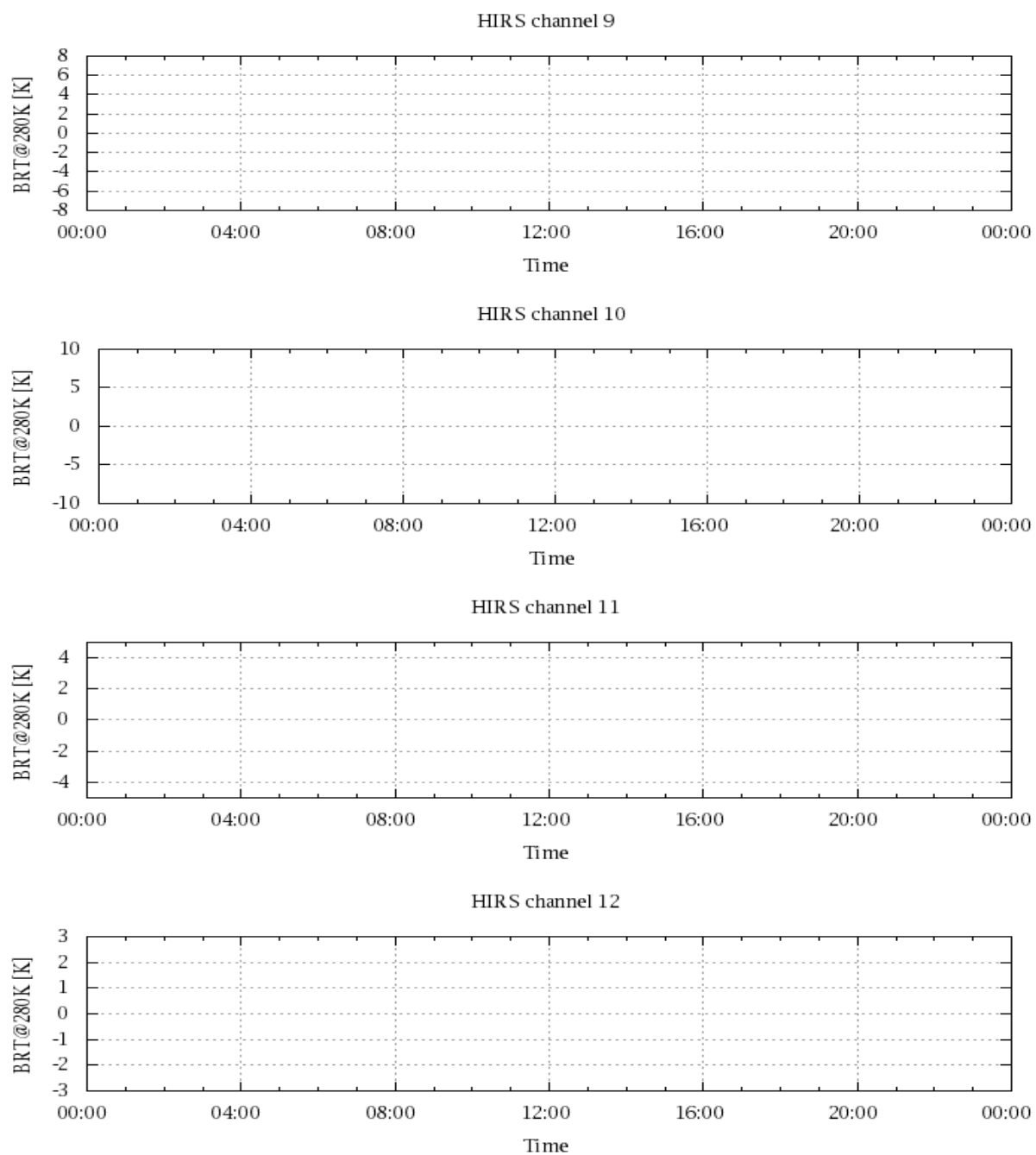


Figure 19: Radiance Differences in BT

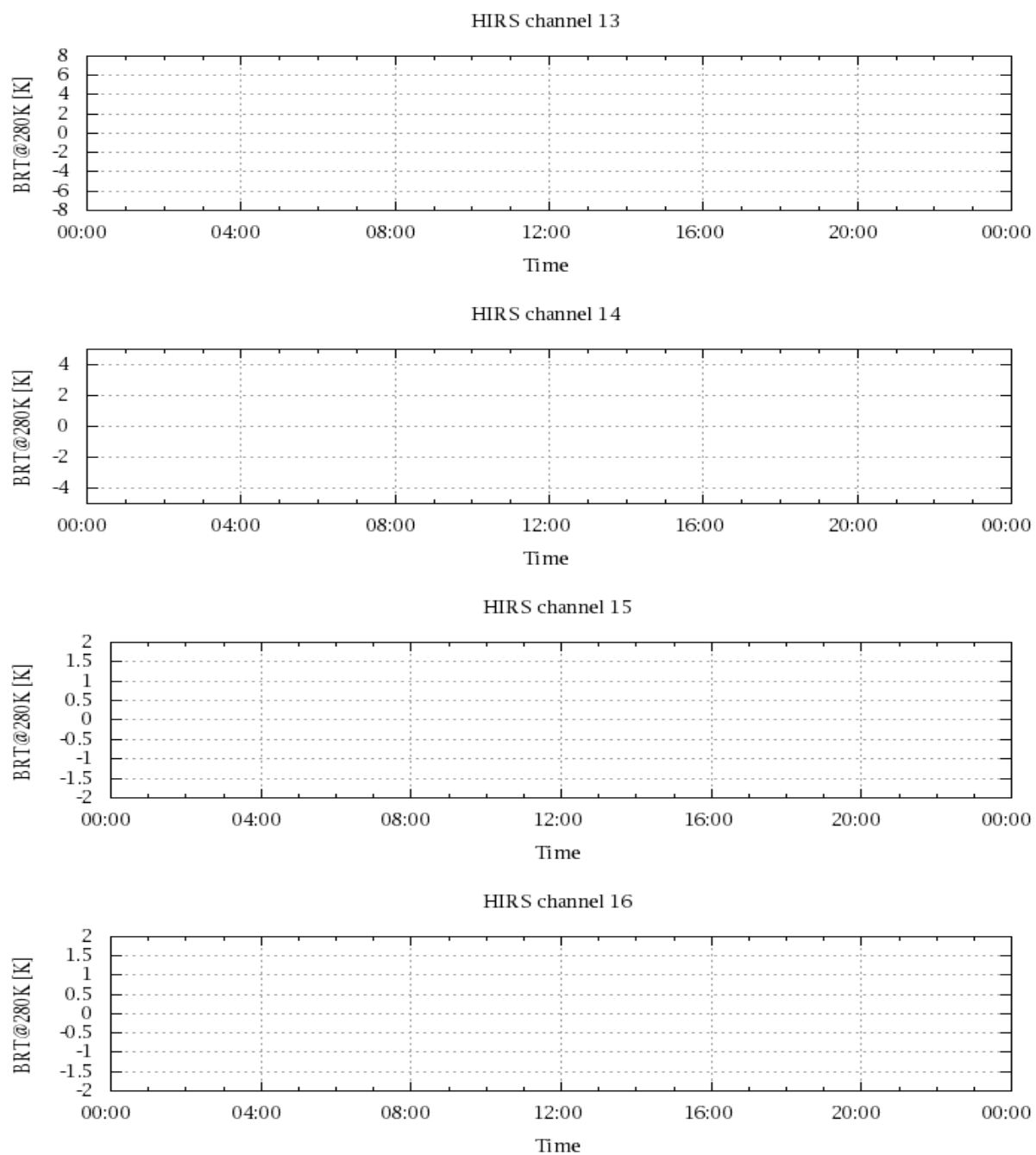


Figure 20: Radiance Differences in BT

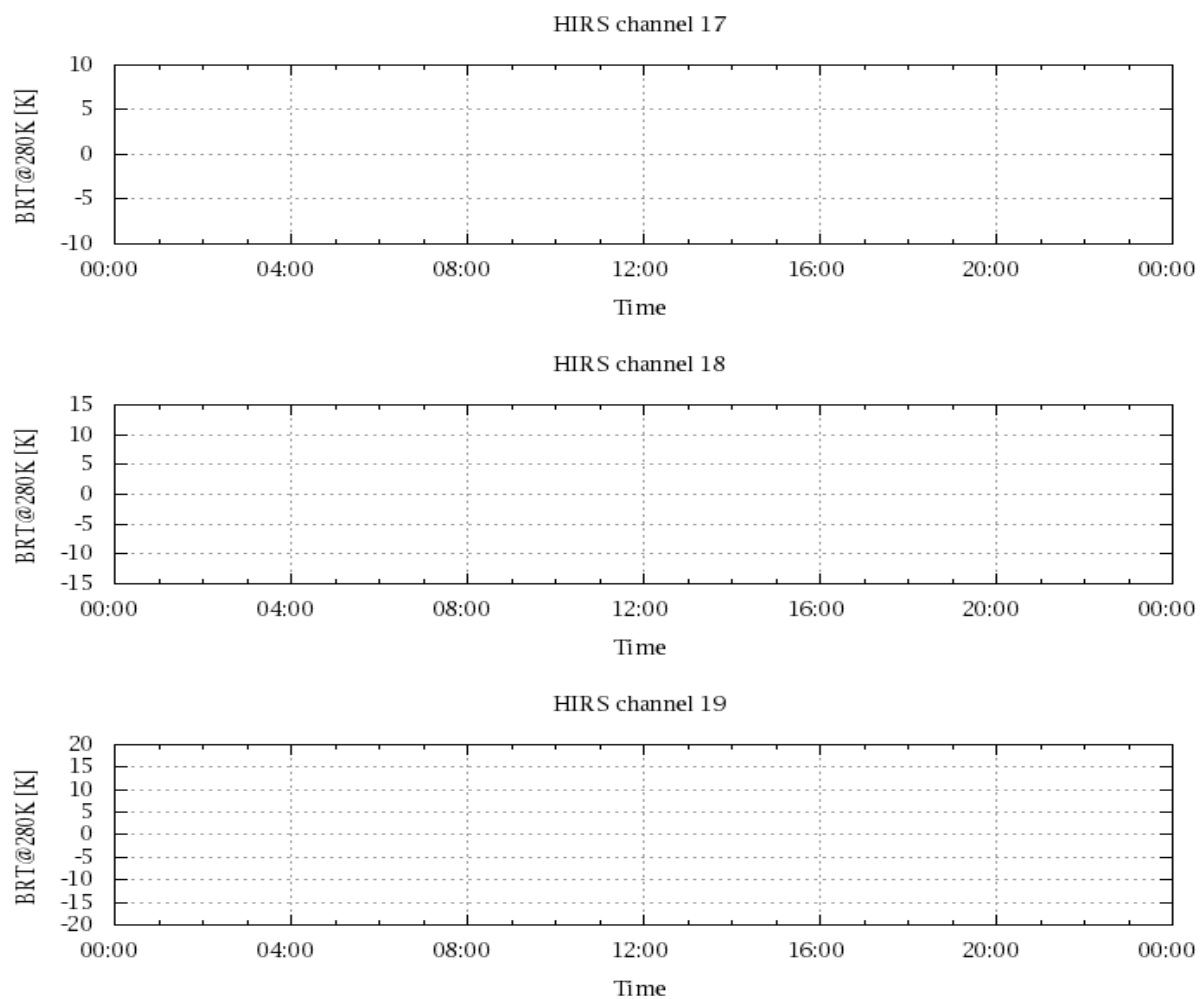


Figure 21: Radinace Differences in BT